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ABSTRACT

Many schools and school districts are attempting to introduce principles and practices of Total Quality Management (TQM). These attempts take many forms with varying degrees of commitment of resources and management attention. This paper describes the research design of a study intended to identify best current practices in applying TQM concepts to K-12 school districts across the United States. Specifically, the paper describes the sampling procedure and data obtained in the first phase of selecting schools and districts for later study. A questionnaire sent to a national sample of 205 schools and school districts involved in TQM elicited 43 completed surveys. Three additional respondents sent information (without surveys) and five more respondents participated in telephone interviews. Criteria for inclusion in the study included: (1) involvement of constituents in decision making; (2) a focus on instructional processes; and (3) evidence of data collection and baseline measures. The questionnaire was not seen as powerful enough to determine whether a school was really serious about using TQM to make important changes in teaching and learning so a second level of screening was pursued. Approximately 22 of the responses met the three basic criteria and will be considered for the second level qualification stage consisting of follow-up phone interviews. A set of schools which will become the sites for longitudinal case studies will be selected from this screening. It is argued that TQM has the potential to achieve significant change because the organization uses the results of its evaluation of outcomes and processes to improve practice, and the focus on the client/customer translates into a gain in credibility. One figure and the quality improvement practices survey are included. The initial analysis of survey data from practices in quality improvement in teaching and learning is appended. Contains 21 references. (LMI)

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DOES TQM AFFECT TEACHING AND LEARNING?

Paper Presented to the
American Educational Research Association
National Meeting

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In current literature, both popular and scholarly, the loss in competitiveness of the U.S. in world markets is attributed at least in part, to the inadequacy of our educational system. At the same time, there is a great deal of data indicating that our public schools are doing more than they did 30 or 40 years ago and are doing it better and for more people (Bracey, 1993). Surveys indicate that most direct clients or customers of local educational organizations are satisfied with their schools while at the same time feeling that the nation's schools on average are NOT doing so well (Elam, Rose & Gallop).

Yet, taxpayers (in a broader sense the customers of public education) are not nearly as satisfied as the direct clients of public schools as indicated by the fact that they continually vote less and less money to support education (Elam et al 1993). Employers, who say they must spend a great deal of money retraining newly-hired people, claim that they are not finding employees with the kinds of skills needed to function in today's increasingly complex and technological work world (Berryman 1990, Horan 1993, and Janney-Pace 1993).

Public schools in the U.S. today are arguably more efficient and perhaps even more effective than they were in the pre-Sputnik era. Yet they are not considered good enough, efficient or effective enough for today's and tomorrow's needs. Our economic productivity growth is not keeping pace with our world competitors, especially in Europe and Japan. But how do schools determine what is good enough and how to get there?

This research was funded in part by a grant from the Quality Leadership Center at the Carlson School of Management, University of Minnesota.

Leaders and managers of educational organizations may be somewhat confused by the mixed messages they are getting. Who are their clients or customers? -- Students? Parents? Local taxpayers? Society in general? Employers of their graduates? Colleges and Vocational schools attended by their graduates? Until they clearly define who the customer is, how can they define and improve quality? Can they continue to serve multiple constituents within the present system? School improvement becomes an elusive goal, depending on who is defining improvement and their method.

In recent years, many techniques and popular concepts have been introduced to school systems. They often have three-letter acronyms (e.g. SBM--site based management; OBE--outcome-based education) and may be based on good theory but have little practical application assistance and almost no tie-in to performance (e.g. empowerment, shared decision making, computer literacy, multi-disciplinary team teaching, restructuring, etc. rather than measures of student achievement and performance). One would expect that the rationale for these interventions, though it is usually not stated, would be the possibility of improving some kind of performance outcomes for schooling. But little true school change (i.e. changes in the delivery of teaching and learning at the classroom or performance level) seems to have resulted from the application of the techniques and concepts noted above, though the nation's schools have spent hundreds of millions of dollars on consultants and training seminars to implement such "programs." For a summary of the research on school based management's (lack of) impact on student achievement see Peterson (1991).

In short, there has been a great deal of frustration over the failure of school reform efforts that began with the "Nation at Risk" report (1983). Scholars such as

Sarason (1990) provide many theories for why reform efforts are failing. According to a prominent management scientist, Russell Ackoff, "The problem with education is that society is trying to improve the wrong system rather than making the system right" (1993).

Further complicating the problem is the fact that very little research in education administration has focused specifically on outputs, as of yet. Some very general research has been conducted on the impact of processes and behaviors on output (effective schools literature), but this has been hard to apply. This is true because of the difficulty in measuring the processes (e.g. high expectations, safe and orderly climate, collegiality, strong instructional leadership, parental involvement, well-defined goals, and a system for monitoring progress, etc.) and the narrowness of the output measures (typically standardized reading and math test scores and often only in urban schools) that have often been used as the dependent variables.

A recent summary of the literature linking processes to outcomes is a "meta-review" and synthesis of the research on variables related to learning done by Wang, Haertel and Walberg (1990). This study provides some excellent guidance to those who might be trying to use any technique for improving student output. They found that the variables most strongly related to learning were student factors (metacognition and peer group influence), classroom instruction variables (classroom management, quantity of instruction, student-teacher social interaction), and classroom climate. They noted the minimal effect of state and district policy variables and administrative decision-making on student learning.

Aside from this "meta-review" which included some empirical study, there has been little empirical data from schools on the relationship of processes to

outcomes. A recent study found that in research on school outcomes, both in North America and Europe, most theoretical models used to interpret findings are unprepared to address conversion of process variables to outcomes. Most are built on the assumption that outcomes can be attributed to something in the system or institution, and the absence of linkages back to the learning environment leaves internal decision makers without information to correct causes that explain variations in quality (Nedwick and Neal, 1993).

One approach that is believed to have the potential for helping to address some of the shortcomings in the reform efforts to date is the application of "Quality" concepts in school systems. Because "Quality" concepts force an organization to think in terms of processes and outputs rather than inputs, they can be especially useful to educational organizations, which traditionally have emphasized inputs. For example, credit hours, seat time, credentials of teachers, pupil teacher ratios, and legislated number of class days have been important indicators in the highly regulated monopolistic context of public education.

One recent article on the application of TQM points out a caution in trying to apply the industrial quality "control" model to an educational organization. It points to the need for a different approach (the authors call it "Total Quality Learning" or TQL) when applying "Quality" concepts to conditions involving high task uncertainty. Despite this caveat, application of the "Quality" process, or TQM, unlike most of the school reform techniques and attempts at systems change introduced thus far, seems to have a real chance for achieving some important changes in the processes and outcomes of schooling for at least two key reasons. First, the application of "Quality" concepts forces an organization to begin measuring outcomes AND processes -- and TO USE THE RESULTS OF THESE

MEASURES TO IMPROVE PRACTICE. With results measures and process measures in hand, continuous improvement goals can be set and the natural internal motivation of most educators can be activated to work more effectively toward these goals. Second, by focusing some attention on the client or customer, the schools could begin to gain much more credibility and in turn probably be rewarded with more resources to perform their socially vital jobs more effectively. Properly applied, it is said that "Quality" concepts will lead to the kinds of systems changes that schools must undergo if true reform is to take place.

To have the desired effect on student and school performance, any reform or restructuring effort must address important process variables and try to ascertain their relation to outcomes and then work on enhancing the impact of these factors on student achievement. The same, of course, is true of TQM.

Therefore, empirical studies of TQM efforts are needed to see if data that truly relate to meaningful teaching and learning processes and outcomes are really being collected. If so, are these data being used to improve teaching and learning. Until recently, the research and writing on "Quality" in schools has been chiefly normative or prescriptive in nature, drawing mostly on business for its examples and empirical data. There is a need for empirical work in schools and other education organizations to identify the impact over time of the application of quality principles in these kinds of organizations. (Murgatroyd & Morgan, 1993, Lezotte, 1993). Since true reform and system restructuring could take five to ten years before visible results can be observed, in most cases, it may be too early in the implementation stages to learn a great deal about the effectiveness of the applications. Our hope, however, is to begin a process of longitudinal tracking of implementation efforts over time. To do this, we have to try to identify those

schools or school districts that seem to have the most promise of producing useful results.

Building on the idea of total quality learning and also cognizant of the fact that any attempts at school reform must have some direct impact on the classroom and on teaching and learning, we launched a research program with the long run objective of looking at how "Quality" concepts might be affecting or might have the potential to affect teaching and learning, and ultimately affecting system change. We plan to identify best current practices in applying "Quality" concepts available in K-12 school districts in this country. We also propose to study the evolution over time of these practices and the practices in school districts not yet as far along, with a view toward gaining better understanding of the opportunities, pitfalls, and potential benefits of various approaches used in implementation.

The first phase in our program was to identify the schools in the country who seem to be applying in a serious and thoughtful way, the principles of total quality management. At this stage we were not trying to look at what approaches they used (Baldrige, Deming, Juran, 3-M, or others), but rather whether they were applying some key general concepts such as the tracking of processes that might be related to teaching and learning, a focus on client needs, monitoring of processes and outcomes and then using data for continuous improvement efforts.

Many schools and school districts are currently attempting to introduce principles and practices of total quality management. These attempts take many forms with varying degrees of commitment of resources and management attention. This paper reports on how we identified our sample and reports on the data we obtained in our first phase in which we are "qualifying" schools and districts

for later study.

The next phase of our work will be to do detailed case studies in a very small number (4-6) of schools which are at various stages of development of the application of "Quality" concepts. In these studies we will attempt to see the development of these efforts over time and try to identify the factors that lead to changes in teaching and learning and in systems change. We also want to find out if schools try to relate any processes to outcomes and of course what outcomes they track over time -- such as test scores, drop-out rates, attendance, participation rates, college admissions. Even more importantly we want to find out how they determine which outcomes to track to see if they are truly trying to become more sensitive to customer or client needs.

METHODOLOGY

We first selected a national sample of schools to which we sent a preliminary questionnaire. The sample was selected by using lists from the American Association of School Administrators (quality list), the American Society for Quality Control, the Minnesota Academic Excellence Foundation (Partners for Quality), the 3rd Annual National Governors' Quality Conference and added schools identified in the literature as being involved in TQM. A total of 205 schools and districts were identified.

The following mailings were sent to contact persons at each of the schools/districts in the database (205):

1. a pre-survey postcard - which explained the purpose of the research, the people involved, and that the respondent was chosen to participate and would be receiving a survey.

2. survey packet - included the "Practices in Quality Improvement in Teaching and Learning" survey (see exhibit one), a reply postcard (see exhibit two), a cover letter, and a stamped return envelope.
3. thank you letters will be sent to those who returned the completed survey, and we will be contacting many of them in the future as we gather longitudinal data.

The questionnaire (exhibit one) was designed to obtain brief general answers to the questions dictated by our framework noted above and attempted to answer the following:

- Processes tracked (researchers judgment on their relation to teaching and learning)
- What outcomes are tracked and who decided on their importance (Are external clients considered?)
- What is done with the data collected? Is it reported back for action?
- How does their resource allocation to staff development reflect their commitment to effectively apply "Quality" concepts?
- Is input from external clients used to influence the measurements employed and the subsequent action steps?

RESPONSES

We received 77 reply postcards back. Several of the respondents (4) were forwarding the survey to someone else in their school, two returned saying that they were not a school per se, 15 said they would not reply (stating various reasons including not enough time and we do not track or do continuous improvement), three respondents said that they would return the survey later, and eight said they would be willing to respond by engaging in a phone interview.

After a two-week period, follow-up phone calls were attempted to all those who had not responded in some way (to remind people to return the survey). Approximately 60 people were actually reached.

From the 205 who were sent a survey, we received 43 completed surveys. We received packets of information from three respondents (without surveys), and we were able to complete 5 phone interviews (with those that said they were willing to reply by phone rather than fill out the survey). A total of 51 respondents provided data for the research and for selection of the schools for future detailed field work.

- Number mailed: 205
- Completed questionnaires returned: 43
- Additional materials returned: 3
- Phone interviews: 5
- Total Responses: 51

The phone interviews (5) were conducted following the questions from the original questionnaire.

Initial Screening

Since the chief purpose of this initial survey was to identify potential schools for our later research, we needed to apply specific criteria to screen the surveys. In trying to qualify schools for our later case study we thought several criteria were important. It was not vital to us that they identified themselves as "doing TQM", but was more important that they gave us some evidence that they were really

tracking progress or changes in process variables that might have the possibility of truly influencing teaching and learning.

The responses were screened on several criteria based on research on the implementation of TQM in education. The basic criteria were: 1) involvement of constituents (parents, community members, students, teachers, and administrators) in decision-making, goal-setting, or general input; 2) a focus on instructional processes (as opposed to only looking at outcomes); and 3) evidence of data collection and baseline measures (benchmarking, tracking processes, etc.). In analyzing the responses, some evidence that each of these three conditions existed was necessary to meet the initial screening qualifications.

We decided our questionnaire was not powerful enough to determine whether a school was really serious about using TQM to make important changes in teaching and learning. So we decided to pursue a second level screening. Approximately 22 of the responses met these three basic criteria and will be considered in the second level qualification stage. This will consist of follow-up phone interviews designed to better understand the responses given by several of the 22 schools who are in the first cut, where we felt unsure of our decision.

After the secondary screening, we will select a set of schools which will become the sites for our longitudinal case studies. These are the schools in which we will perform detailed field work. We will select one or two schools which have been involved the longest and which seem by initial screening, one or two schools which have just begun and one or two schools which are in their second, third or fourth

year of design and implementation work. The case study approach as outlined by Yin (1994) will be the dominant methodology for this part of our study.

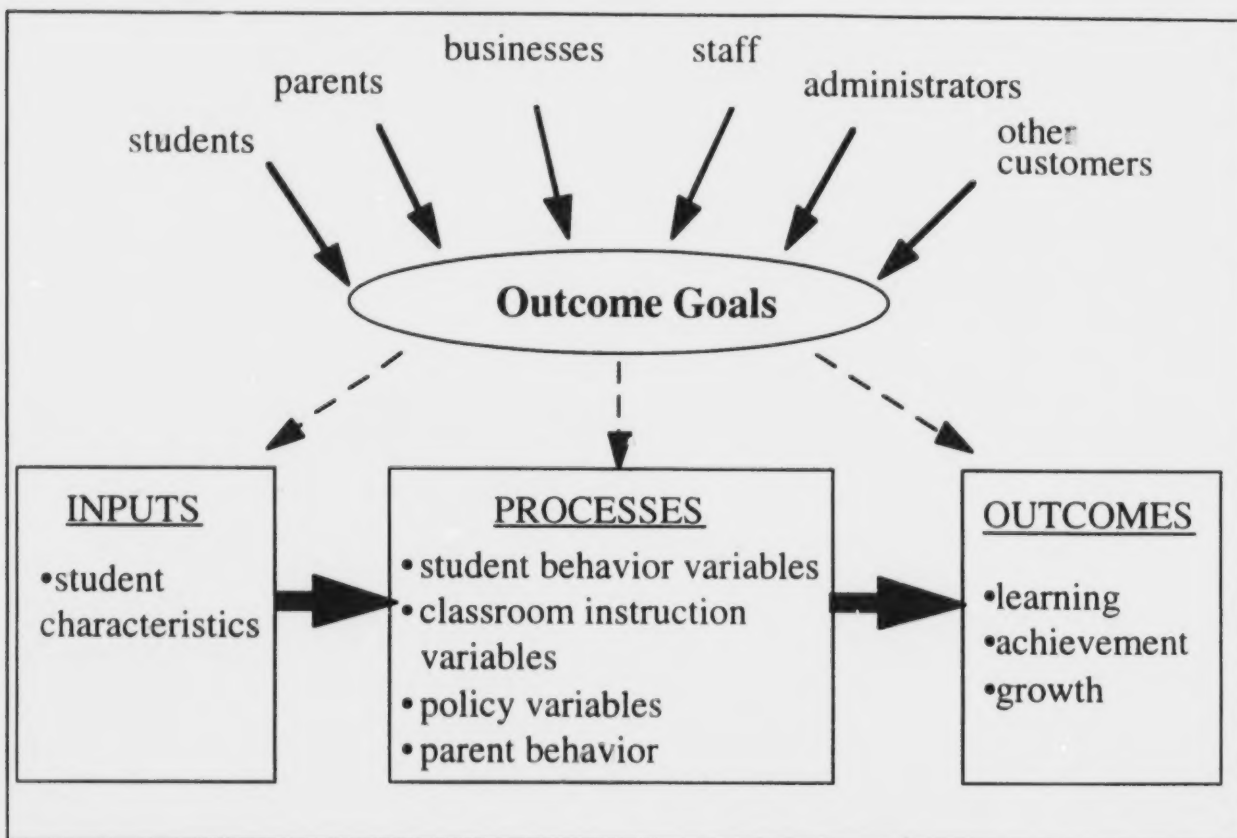
The framework for these studies will include the variables outlined by Wang et. al. in their meta-research on student learning. We will try to see if student, classroom, community context, and teacher-behavior variables are being studied, tracked, reported, and whether the results are being acted upon in a meaningful way.

DATA ANALYSIS

Since this is not a survey administered for the purpose of gathering statistical data, we only report the responses for information where they seemed to have special interest or significance. The main use of the data was to help us select the sample for the next step and to help design the protocols for the field work to be done. See appendix A for a summary of the findings. We are now in the process of designing the field work procedure to be used in collecting the case studies. We hope to begin these case studies next year.

FRAMEWORK FOR CASE STUDIES

Based on a study of the research and data collected in our survey, we will develop a framework and protocol for the field work. Our initial thoughts on what that framework may look like is depicted as follows:



PRODUCT

The output of the case study research should include a detailed examination of the kinds of implementation programs that seem to be headed toward significantly changing what happens in the classroom in teaching and learning. We should also be able to include a set of recommendations for administrators on (1) how to begin the quality journey, pitfalls to avoid, best approaches for success, obstacles, reasons for potential failure; (2) approaches used to keep motivation and interest high during implementation; and (3) how schools have institutionalized the concepts.

According to Wolf and Leader, "in school districts where total quality has been successfully implemented, it fosters shifts in thinking about the structure of educational systems and where they fit in the total community. People see their roles differently; business, education and the community recognize their interdependence; and schools no longer deliver only the basic skills. They strive to deliver education that provides skills more in line with those identified in the SCANS report" (1993, p. 19).

Therefore, another way in which we will attempt to identify effective use of TQM is by noting whether the schools are incorporating local community and business views, and whether or not the school is discussing and tracking processes that signify an awareness of the importance of the interdependencies among school, community, business, and teaching and learning.

We will be especially concerned with whether there is some attempt to look at the processes which affect teaching and learning and to identify what these might be. For example, do the school's constituents reviewing literature such as Wang et al (1990), or gather and analyze some kind of local data on student characteristics, school context, classroom methods, and home and community influences? Or do they gather and analyze data on other variables that researchers or practitioners judge as being important to student performance and achievement, or as being important to achieving other outcomes that constituents wish from the school?

It may take several years to answer our basic question, "Does TQM affect teaching and learning?", but our research program will have as its ultimate goal to find out if and how this happens.

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PRACTICES IN QUALITY IMPROVEMENT IN TEACHING AND LEARNING

A research project of the
the Bush Educators' Program,
the Quality Leadership Center
(of the Carlson School of Management, University of Minnesota)
and cooperating K-12 schools across the United States

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Exhibit #1

QUALITY IMPROVEMENT PRACTICES SURVEY

Brief answers, lists, outlines, or attachments would be sufficient responses to the questions. Please feel free to attach forms or documents used in your schools in answering the questions below.

YOUR NAME AND TITLE _____

SCHOOL AND DISTRICT NAME _____

ADDRESS _____

NUMBER OF STUDENTS IN YOUR SCHOOL _____ DISTRICT _____

AS YOU ANSWER THESE QUESTIONS ARE YOU THINKING OF YOUR:

_____ Classroom(s)	_____ Yourself (title: _____)
_____ School Building	_____ School District

1. List a few of the key outcomes on which you gather data.

2. Have external constituents had input into the selection of outcomes to be tracked? If so, how?

Exhibit #1

3. What has been the primary focus (if any) of your staff development activities over the last two years?

4. How are staff development needs determined?

5. Do you gather data on constituent perceptions? If so, how often and what do you do with the data?

6. What data on teaching and learning processes do you track over time? (e.g. teaching methods, class size, quantity of homework assigned, parental involvement, other)

7. How do you use data you have on processes and outcomes?

8. Describe briefly the use of any Total Quality Management tools or processes in your school (district) not already mentioned above.

OPTIONAL: ATTACH COPY OF ANY FORMS OR GRAPHS YOU USE THAT WOULD HELP EXPLAIN ANSWERS TO ANY OF THE ABOVE QUESTIONS

Exhibit #2

REPLY CARD

- _____ I AM RETURNING THE COMPLETED SURVEY
- _____ WILL REPLY LATER BUT DO NOT HAVE TIME NOW
- _____ WILL NOT REPLY. SORRY, TOO MANY QUESTIONNAIRES
- _____ WILL TAKE A CALL AND PROVIDE BRIEF ANSWERS BY PHONE
- _____ WILL FORWARD THE SURVEY TO _____ (name/title)
TO FILL OUT FOR ME

Your Name _____

School _____

Address _____

Phone # _____

APPENDIX A

INITIAL ANALYSIS OF SURVEY DATA FROM PRACTICES IN QUALITY IMPROVEMENT IN TEACHING AND LEARNING

The *Practices In Quality Improvement In Teaching and Learning Survey* sought general, informational data on a number of items directly related to quality improvement practices in schools identified as leaders in total quality educational programs. Attempting to initiate a set of non-leading, open-ended questions, while trying to determine what outcomes were actually being tracked, the survey began with the request 'List a few key outcomes on which you gather data.'

Tabulated results indicated that nearly 75% of the respondents listed academic or learning related items as being key outcomes on which they gathered data. The terms used by the respondents to describe these academically related outcomes included test scores, attendance, drop-out rates, course outcomes, instructional methods, assigned homework, graduation rate, and student masteries or competencies. One quarter of the respondents named specific curricular areas on which they gathered data.

Approximately one-third mentioned organizational or system related outcomes as being key indicators they gathered data on. These areas were identified by terms such as staff development, goal setting, budget, climate, and department specific areas such as custodial, food service or transportation.

Nearly one-half of the respondents listed factors relating to non-academic, but still school related outcomes as being factors on which they gathered data. These areas included client surveys, customer satisfaction, parent involvement, discipline, job placement, college admissions and graduation, and specific student attributes including self-esteem, motivation, mobility, participation and responsibility.

The survey asked for specifics regarding the tracking of data on teaching and learning, and offered examples such as teaching methods, class size, quantity of home assigned and parental involvement. Even with the request for and examples of specifics, a number of respondents gave rather vague answers. Several stated that they do not track any specific processes.

Of those who do regularly track data, no single process appeared universally popular. Class size was the most often mentioned area tracked, with thirty-nine percent of the respondents indicating that they kept data on class size. Teaching methods and test scores were close followers with thirty-four and thirty-two percent respectively, and parental involvement was tracked by twenty-seven percent of the respondents.

The responses indicated a much higher level of agreement on what was done with the data once it was collected. Here, over forty percent of the respondents included the words "make improvements" in describing their use of the data they had collected. Additionally, nearly twenty-five percent stated that they used the data to make "decisions." One must assume that these decisions also represented improvements to the educational systems, bringing the combined total using data for decision making improvements to sixty-eight percent.

A considerably smaller number, seventeen percent, stated that they used the data collected to "share" or "inform". Finally, twelve percent said that they used the data to "measure" but gave no other indication what they did beyond measuring.

Staff development was identified by the research team as being a key indicator of quality improvement practices both from the standpoint of its close association with the teachers and the craft of teaching, and because of the ability and responsibility of many staff development teams to conceptualize and commit to practice essential principles of system changes. The questionnaire first asked what the primary focus of the staff development activities had been over the past two

years, and then asked how staff development needs were determined.

In describing the focus of their staff development team, sixty-six percent of the respondents included the terms "quality" or "improvement" in the team's responsibility. Several stated that the staff development team's primary purpose was to "facilitate leadership" and "deploy" Total Quality Management techniques in the school.

Yet when asked how staff development needs were determined, little uniformity could be found. Some mentioned staff surveys, while others noted state mandates. A few relied on building-site interests to determine staff development needs, and others used district-level steering committees. A small number said they were dependent on "district goals", while others focused on "visionary leadership" and "emerging trends." Finally, when answering how staff development needs were determined, one respondent said "Not very well!"; another simply said "We sit down together and talk."

The final set of data gathered by the questionnaire dealt with the impact of external constituents. Again, two questions were asked. One asked whether data was gathered on constituent perceptions and the other on whether constituents had input into the selection of outcomes to be tracked. Both questions included follow-up requests for how this data, if gathered, was used.

The idea of gathering constituent data appeared to be a popular activity with Total Quality schools. Eighty-two percent of the respondents indicated that they regularly gathered constituent data. The constituent groups named by the respondents varied considerably, and included staff, students, parents, administrators and community groups, with parents and being the most often mentioned group. Frequency of data gathering also had a wide variance, ranging from once every three years to as often as four times per year.

Respondents were less clear about what they did with the data once they had

collected it. Several stated that they used the data to help determine a focus for improvement and some used it for setting district goals. Others said they used the data for modifying programs, a couple mentioned it was used to focus issues for staff development, two said it was given to the teachers, and another stated that it was given to the school board.

Over three-quarters of the schools responding indicated that they had external constituents giving input into the selection of the outcomes that were to be tracked. Again, there was little common ground shared among the respondents as to what purpose this input by outside constituents had. Several noted that it helped in planning, and three specifically mentioned strategic planning. Goal setting was listed by two respondents, and selecting standards or outcomes was named by six respondents. Other uses of constituent input included targeting areas for improvement, creating school report cards, and determining what students should be able to do when they graduate from high school.